

REMARKS

Claim Rejections under 35 U.S.C. § 101

In paragraph 5 of the Office action, claims 1-44 are rejected under 35 U.S.C. § 101 for nonstatutory subject matter. The examiner states that “the computer system must set forth a practical application of § 101 judicial exception to produce a real-world result.” For the invention to have a practical application, it must either transform a physical thing, or the final result must produce a useful, concrete, and tangible result. It is respectfully submitted that the amended claims satisfy the test of having a final result that is useful, concrete, and tangible.

With respect to independent claims 1, 4, 23, and 26, each of those claims has been amended to recite performing a pattern-based search and outputting a result of the pattern-based search. The result of the pattern-based search is, as the examiner will recognize, a solution to a packing or component layout problem. Thus, by outputting a solution to a packing or component layout problem, the final result of these claims is useful. There is no question that the result is concrete in the sense of being repeatable. Finally, packing and component layout problems are tangible, real-world problems, and not abstract problems. Thus, it is respectfully submitted that independent claims 1, 4, 23, and 26 satisfy 35 U.S.C. § 101.

Independent claims 11, 16, 33, and 38 have also been amended. These claims are directed to pre-processing activities which are useful in computer programs for solving packing and component layout problems. For example, claim 11 recites ranking each of a plurality of moves on a set of components. Moves are not abstract. Rather, moves represent real-world activities such as translation, rotation, and the like. These real-world activities are carried out on a set of components, which again are not abstractions but, rather, may be cargo, pieces, or parts. Claim 11 then recites ordering the moves within a program for performing a pattern-based search from those moves having the greatest effect on the components to those moves having the least effect. It is thus seen that claim 11 is not an abstract manipulation of data but, rather, a ranking of moves based on their effect on a set of components, followed by an ordering of the moves within a computer program from those moves having the highest ranking to those having the lowest ranking. Claim 16 is similar to claim 11, except that instead of ordering the moves, the moves are clustered into intervals. Claims 33 and 38 are similar to claims 11 and 16, respectively. It is respectfully submitted that the ability to reorder or cluster moves within a

program for performing a pattern-based search is a final result that is useful, concrete, and tangible.

Independent claims 21 and 43 have also been amended. Independent claim 21 is a preprocessing method, and independent claim 43 is a computer-readable medium carrying an ordered set of instructions, which, when executed, performs a pre-processing method. Both methods recite deriving a function that relates moves to changes in an objective function and using that function to organize the moves within a program for performing a pattern-based search. Certainly the Office will recognize that a computer program for performing a pattern-based search is itself something which produces a result that is useful, concrete, and tangible. Claims 21 and 43 are directed to determining an order for moves to be performed within the pattern-based search algorithm. Thus, claims 21 and 43 recite subject matter which has as its result controlling or modifying the order in which a pattern-based search is performed. As such, those claims set forth subject matter which is useful, concrete, and tangible.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 101 rejection of claims 1-44 be withdrawn.

Claim Rejections under 35 U.S.C. § 102(e)

On page 4 of the final Office action, claims 1-44 are rejected under 35 U.S.C. § 102(e) as being anticipated by Lundahl et al. (US 6,636,862). The Applicants respectfully traverse this rejection.

Lundahl is directed to a very different problem than the instant invention as the abstract of Lundahl illustrates:

In a method and system for the dynamic analysis of data represented in distinct matrices, if two data matrices X and Y are present in which corresponding rows of X and Y each refer to the same underlying object, a relationship can developed between the X and Y data matrices, which allows for a prediction of responses in Y on the basis of inputted X-data. And, if a third data matrix Z is present in which corresponding columns of Y and row of Z each refer to the same underlying object, a relationship can developed between the X Y and Z data matrices, which allows for link between X and Z through Y. (Lundahl – Abstract)

Lundahl discloses a method and system for the dynamic analysis of data related to consumer choice modeling or quality control programs. (See Lundahl, column 1, lines 24-26, and column 8, lines 43-67). Lundahl's use of X, Y, Z matrixes for storing consumer choice or quality control data is merely a naming convention for the matrixes, and the matrixes have no correlation with the x, y, z axes. Lundahl has nothing to do with pattern-based searching, which is the subject matter of the instant application. See declaration of Dr. Aladahalli submitted herewith, paragraphs 5-9. Dr. Aladahalli is at least a person of ordinary skill in the art. See declaration, paragraphs 1-4.

The Office cites Lundahl, column 38, lines 19-54, and column 42, lines 20-32, as allegedly anticipating claims 1 and 23. The Office reads too much into Lundahl. The examiner's statement is incorrect because Lundahl, at column 38, lines 19 – 54, does not disclose a method for solving packing and component layout problems. The examiner's statement is further incorrect because Lundahl, at column 38, lines 19 – 54, does not describe performing a pattern-based search. Lundahl, at column 38, lines 19 – 54 describes the general problem where the goal is to find the minimum of a given objective function. The cited portion of Lundahl says nothing about the solution to the problem other than the suggestion to use a third-party (Mathworks) routine called SIMPS. The cited portion says nothing about how to solve packing and component layout problems. The cited portion says nothing about what metric is used to drive the search. See declaration of Dr. Aladahalli, paragraphs 10, 11, and 13.

The examiner's position that f_x is a metric is incorrect. f_x is not a metric and Lundahl does not use the expression f_x as a metric. The complete expression is $f_x: z \rightarrow y$. f_x is a function indicating that if the x variables are held fixed, then some function of the x variables explains the mapping between z and y. See declaration of Dr. Aladahalli, paragraph 12.

The applicants finally point out that column 42, lines 20-32, discloses a user interface on a networked computer. There is no mention of any kind of procedure let alone a procedure for performing a pattern-based search, characterized by driving the search with a metric other than step size, such as that required by claims 1 and 23. See declaration of Dr. Aladahalli, paragraph 14. Accordingly, it is believed that independent claims 1 and 23, as well as dependent claims 2-3 and 24-25, are in condition for allowance.

The Office cites Lundahl, column 38, lines 19-54, as allegedly anticipating claims 4 and 26. The Office's position set forth on page 5 of the Office action again reads too much in Lundahl. Lundahl does not disclose "moves," Lundahl does not disclose "a set of components," and therefore, Lundahl cannot disclose the "effect of a plurality of moves on a set of components." The examiner's statement that "component moves are those characteristics that make up the objective function" makes no sense in the context of the cited portion of Lundahl, because the cited portion of Lundahl does not disclose "components" or "moves" for components. See declaration of Dr. Aladahalli, paragraphs 15 and 16. Accordingly, it is believed that independent claims 4 and 26, as well as dependent claims 5-10 and 27-32, are in condition for allowance.

The Office cites Lundahl, column 38, lines 19-32, as allegedly anticipating claims 21 and 43. The examiner's statements are incorrect because Lundahl does not disclose "moves." Because Lundahl does not disclose "moves," it is not possible for Lundahl to disclose "driving a function that relates moves to changes in an objective function." The examiner's statement that "moves are synonymous with changes to the objective function" is incorrect. "Moves," as that term is used in the pattern-based search field, may or may not result in changes to the objective function. They are not, however, synonymous with changes to the objective function. See declaration of Dr. Aladahalli, paragraphs 17 and 18. Accordingly, it is believed that independent claims 21 and 43, as well as dependent claims 22 and 44, are in condition for allowance.

The Office cites Lundahl, column 32, lines 5-22, as allegedly anticipating claims 11, 16, 33, and 38. The examiner's statement that "Lundahl anticipates ranking each of a plurality of moves on a set of components based on the effect each move has on an objective function; and ordering the moves from those moves having the highest ranking to those moves having the lowest ranking" is incorrect because Lundahl does not disclose "moves." The examiner's statement is incorrect because Lundahl does not disclose "a set of components." Therefore, it is impossible for Lundahl to disclose "ranking each of the plurality of moves on a set of components based on the effect each move has on an objective function." Furthermore, Lundahl does not disclose "ordering the moves from those moves having the highest ranking to those moves having the lowest ranking." See declaration of Dr. Aladahalli, paragraphs 19 and 20.

Appl. No. 10/672,442
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Accordingly, it is believed that independent claims 11, 16, 33, and 38, as well as dependent claims 12-15, 17-20, 34-37, and 39-42, are in condition for allowance.

Applicants have made a diligent effort to place the instant application in condition for allowance. Accordingly, a Notice of Allowance for pending claims 1-44 is respectfully requested. If the examiner is of the opinion that the instant application is in condition for disposition other than through allowance, the examiner is respectfully requested to contact applicants' attorney at the telephone number listed below.

Respectfully submitted,



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